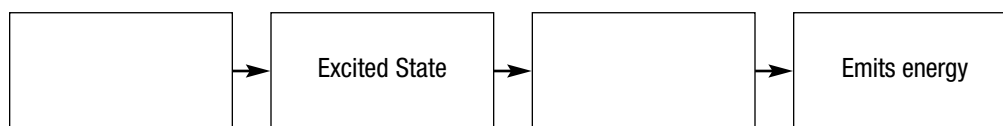


Chapter 4 Atomic Structure

Section 4.3 Modern Atomic Theory**(pages 113–118)***This section focuses on the arrangement and behavior of electrons in atoms.***Reading Strategy (page 113)**

Sequencing After you read, complete the description in the flow chart below of how the gain or loss of energy affects electrons in atoms. For more information on this Reading Strategy, see the **Reading and Study Skills** in the **Skills and Reference Handbook** at the end of your textbook.

**Bohr's Model of the Atom (pages 113–116)**

1. Circle the letter of the sentence that tells how Bohr's model of the atom differed from Rutherford's model.
 - a. Bohr's model focused on the nucleus.
 - b. Bohr's model focused on the protons.
 - c. Bohr's model focused on the neutrons.
 - d. Bohr's model focused on the electrons.
2. Is the following sentence true or false? In Bohr's model of the atom, electrons have a constant speed and move in fixed orbits around the nucleus. _____
3. What can happen to an electron in an atom when the atom gains or loses energy? _____

4. What evidence do scientists have that electrons can move from one energy level to another? _____

5. Is the following sentence true or false? When electrons release energy, some of the energy may be released as visible light.

Electron Cloud Model (page 116)

6. Is the following sentence true or false? Bohr's model was correct in assigning energy levels to electrons. _____
7. When trying to predict the locations and motions of electrons in atoms, scientists must work with _____.
8. What is an electron cloud? _____

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9. Is the following sentence true or false? Scientists use the electron cloud model to describe the exact location of electrons around the nucleus. _____

Atomic Orbitals (page 117)

10. Is the following sentence true or false? An orbital is a region of space around the nucleus where an electron is likely to be found.

11. An electron model is a good approximation of _____.

Use this table to answer questions 12 and 13.

Energy Level	Number of Orbitals	Maximum Number of Electrons
1	1	2
2	4	8
3	9	18
4	16	32

12. Higher energy levels have _____ orbitals than lower energy levels do.
13. What is the relationship between the number of orbitals and the maximum number of electrons in an energy level? _____

Electron Configurations (page 118)

14. What is an electron configuration? _____

15. Circle the letter of the number of energy levels needed for a lithium atom's three electrons when the atom is in its ground state.
- a. zero b. one
c. two d. three
16. Is the following sentence true or false? An excited state is less stable than a ground state. _____
17. Circle the letters of each sentence that is true when all of the electrons in an atom are in orbitals with the lowest possible energies.
- a. The electrons are in the most stable configuration.
b. The electrons are in an unstable configuration.
c. The atom is in an excited state.
d. The atom is in its ground state.